School Shop

vol. IV no. 3
November, 1944

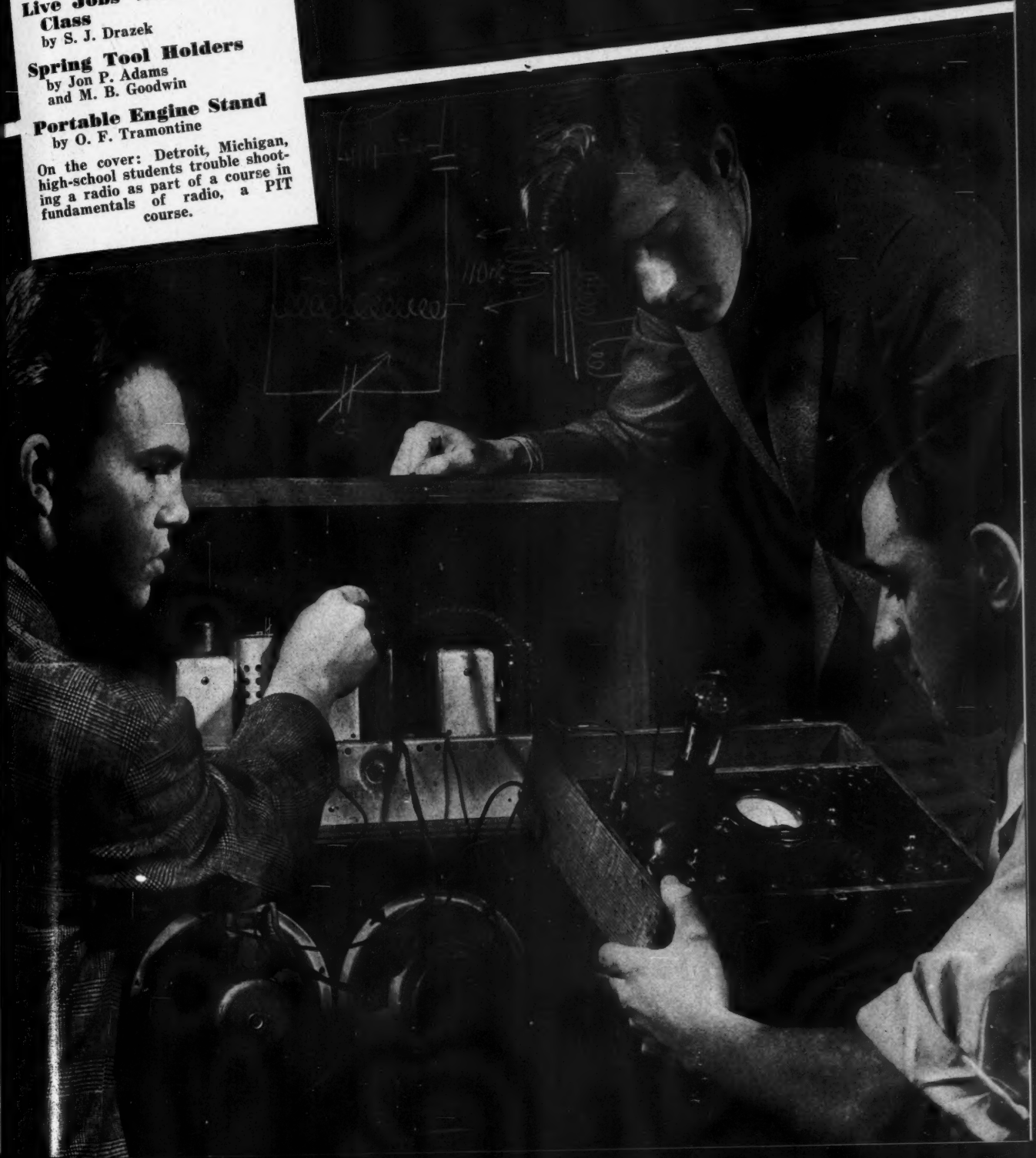
Britain Opens School Shops to War Veterans
by A. F. Rouse

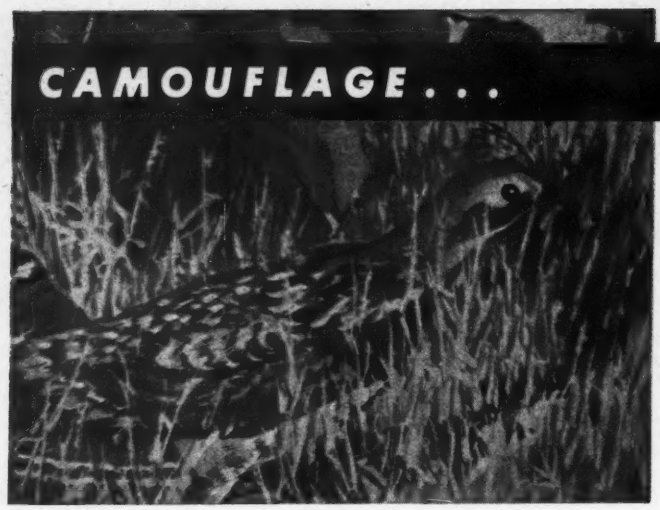
Live Jobs Wake Up Class
by S. J. Drazek

Spring Tool Holders
by Jon P. Adams and M. B. Goodwin

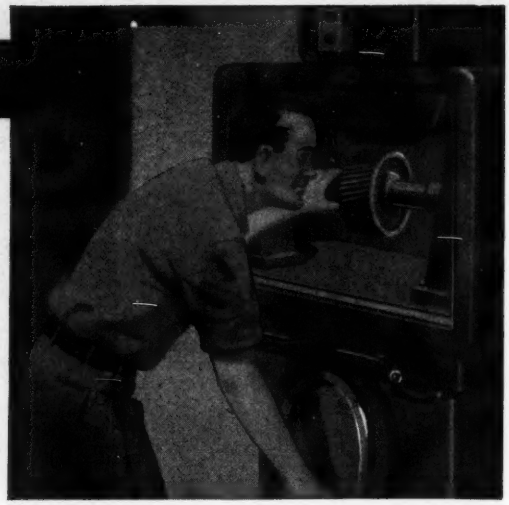
Portable Engine Stand
by O. F. Tramontine

On the cover: Detroit, Michigan, high-school students trouble shooting a radio as part of a course in fundamentals of radio, a PIT course.





Right: Much of our wild life is beautifully camouflaged by Nature. The right protective coloring helps small birds and animals survive—makes it easier for them to hide from their enemies.



Wrong: Camouflage is all right in nature—all wrong in industry. Monotone-colored machines cause eye fatigue—millions of man-hours lost.

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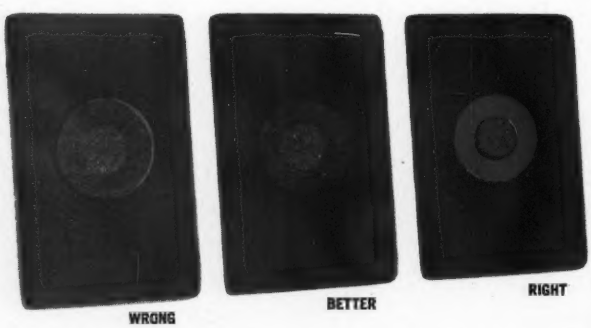
A new system of using color to minimize workers' eye fatigue which will interest all teachers in trade or industrial schools.



• Any Pittsburgh representative can help you apply Color Dynamics with the aid of a Pittsburgh Color Selector. Selection of correct focal colors is made by placing different color panels behind a Vista Green panel (the color generally recommended for non-critical parts) so color can be observed through a round opening. The test is completed by placing a piece of material being processed, across the opening. The focal color which contrasts best with machine and material—is the correct color to use. The above illustrations show Color Dynamics at work. The last panel illustrates how the use of correct focal color provides proper contrast between material and machine—emphasizing critical parts while Vista Green makes non-critical parts recede.

PERHAPS the simplest way to arrive at an understanding of the Pittsburgh system of Color Dynamics is to think of it as *exactly the opposite of camouflage.* Instead of obscuring and hiding, color becomes an agent charged with the duty of making it easier for workers to see their work.

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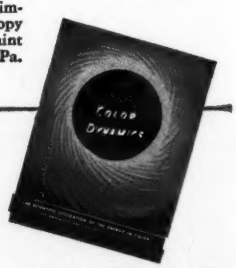

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School Shop

FOR INDUSTRIAL ARTS & VOCATIONAL EDUCATION TEACHERS

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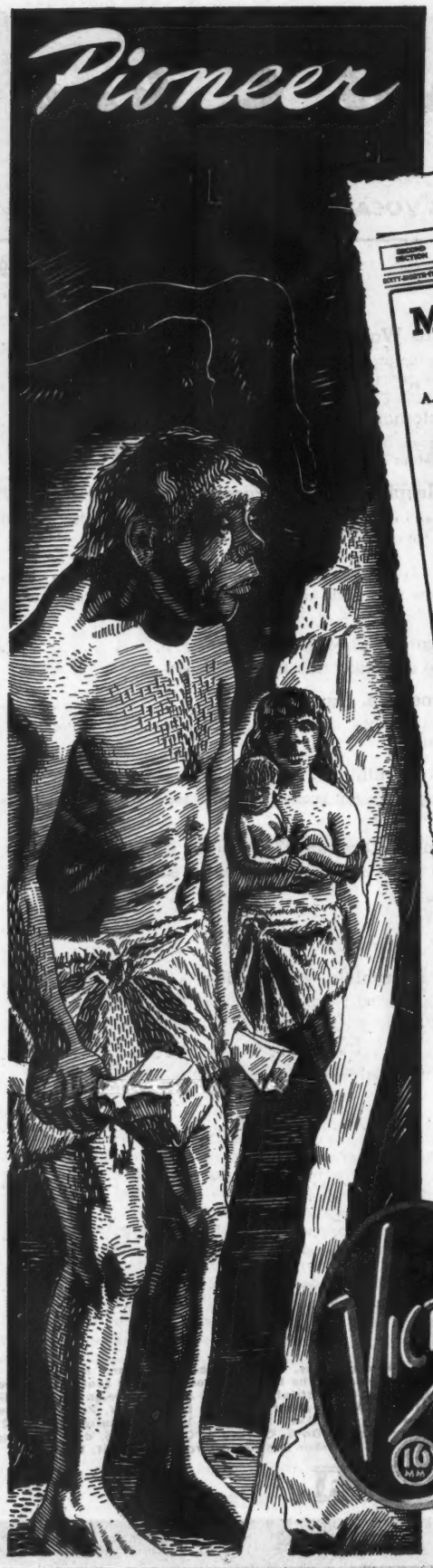

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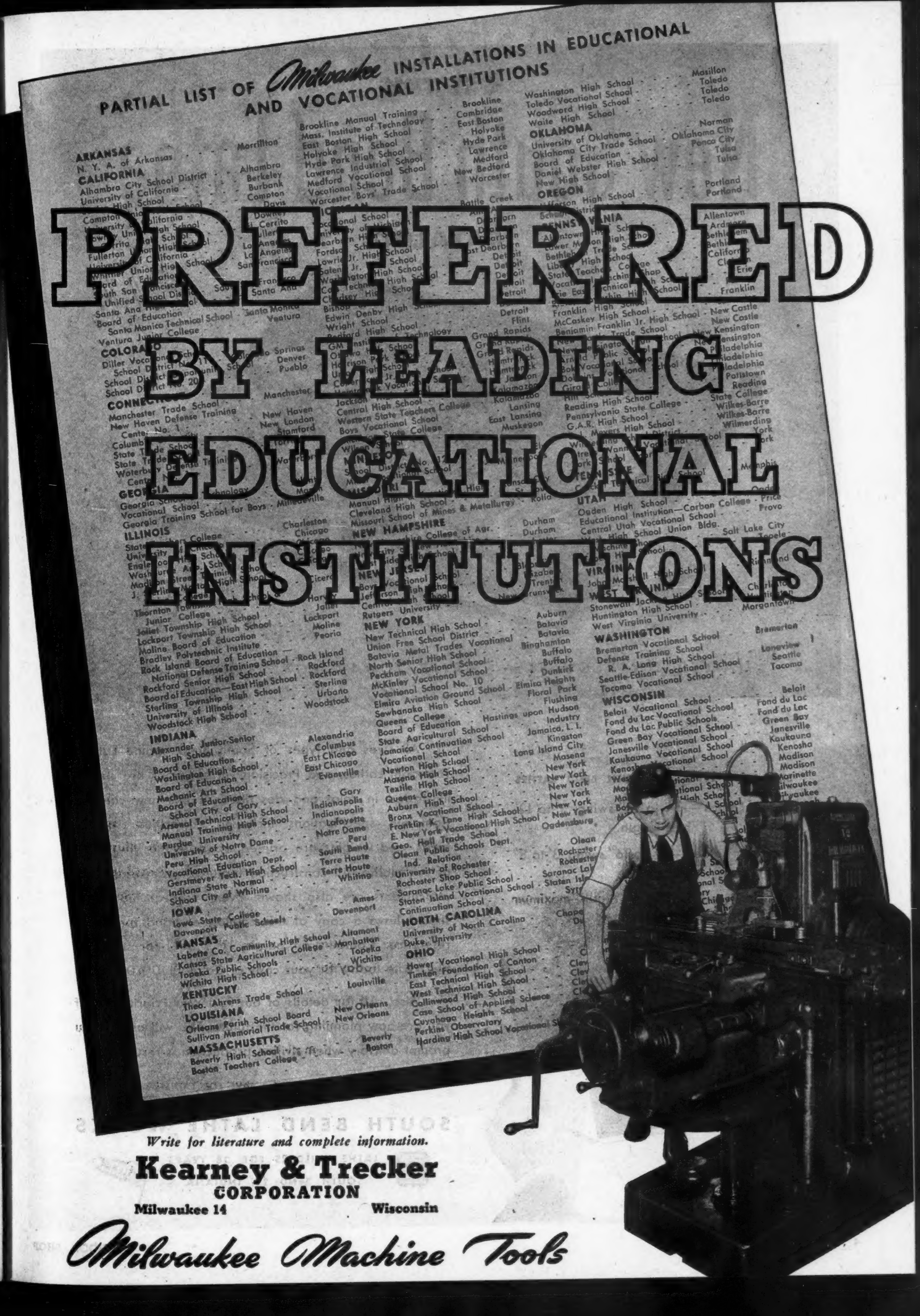
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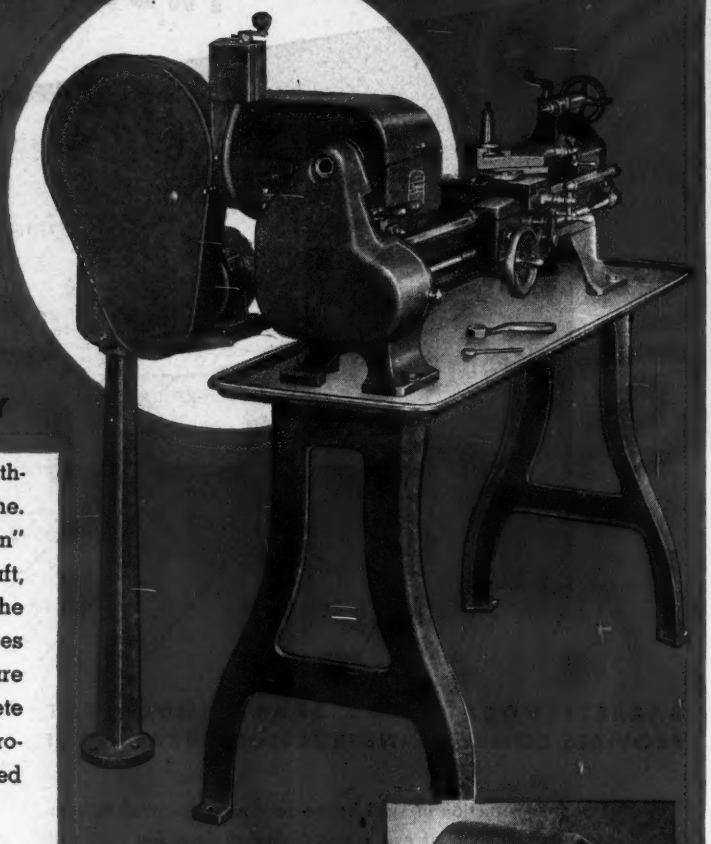

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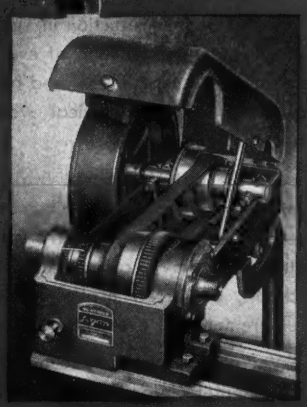

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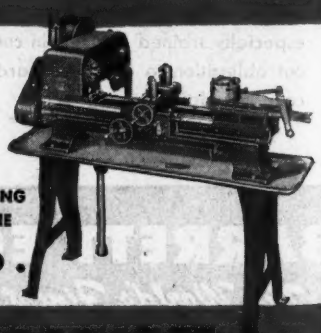

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The provision for training of the disabled in the British Education Bill covers civilians of all kinds in addition to disabled men and women discharged from the Forces. The training has a three-fold objective: Diversional, therapeutic, and vocational.

Britain Opens School Shops to Veterans

BY *A. F. Rouse*

The British Education Bill, counterpart of the United States veterans education program, has passed both houses of Parliament. A. F. Rouse, an official in the Ministry of Labor and National Service, indicates in this article the scope of this general social measure and describes, in addition, the system that is already in operation for the training of the disabled. It is interesting to note that although men and women returning from war services are preferred in this program, the program is not confined to them. It is designed to intensify the use of the British educational system for rehabilitation, to extend the educational opportunities, and it is geared to the postwar industrial employment plans.

IN BRITAIN, as in America, considerable preparation is being made for the training and resettlement of men and women when they are discharged from the Forces.

The schemes so far announced contemplate training for entry into a wide variety of occupations, including the professions and administrative and technical posts in government service and in commerce and industry, as well as ordinary manual work. In brief, the schemes cover all the occupations from the highest to the lowest for entry into which training is necessary. The necessity of ensuring, before training is given, that employment in the particular occupation is likely to be available has not been overlooked, and on this consultations are in progress with the associations of both employers and workpeople covering each occupation. Similar consultations are being held on the kind of training required.

The training schemes apply to able-bodied men and women released from the Forces, Merchant Navy, Civil Defense Service, National Fire Service, Police Auxiliaries, and Civil Nursing Reserve, and to people whose war service has been in other types of work of national importance, including industrial work. Within this general field the men and women who will be eligible will be, broadly speaking, those whose war service interrupted them in following a skilled occupation, or in training for it, or prevented them from beginning on training at all; and who need a course of training to obtain employment suited to their general capacity.

Special care will be taken to ensure that men and women receive their training as soon as possible after release from the Forces. If at any time the facilities for training are insufficient to meet the needs of all applicants without delay, men and women released from the Forces and the Merchant Navy will, in general, be admitted first.

Apart from this provision for the able-bodied, training on a similar basis is available now for the disabled and will of course continue after the war. The provision of training of the disabled is a general social measure, and covers civilians of all kinds in addition to disabled men and women discharged from the Forces, though the latter have a preference.

The establishments at which training is given now for the resettlement of the disabled, and will be given after the war for the resettlement of able-bodied as well, vary according to the particular occupation to which training is aimed. The universities, schools of medicine, and similar institutions cover the higher levels, while at the manual level industrial training is catered for by the gov-

The British are converting wood and metal salvaged from blitzed buildings into slides, trolleys, rocking horses, toys. Here children at an infants' school are enjoying a see-saw made by boys at the London County Council Schools.

Four hundred boys at the Medburn Road School use the carpentry shop in shifts of 40 at a time. The boys in the foreground are putting together a doll's cot under the eye of the instructor.

Left: The boy on right is painting a see-saw made from bits of wood and metal of blitzed bedsteads. His companion is cutting more twisted metal to make another.

ernment training centers, technical colleges, and employers with whom the government make appropriate financial arrangements. The government training centers have already had considerable experience in training for industry, both before the war in connection with the reduction of unemployment and during the war for increasing the skilled labor force on munitions production.

The training for people accepted under the schemes is provided free of charge and in addition maintenance allowances, with supplementary allowances for dependents, will almost certainly be paid.

It is, of course, possible for many men and women in the Armed Forces whose war service has interrupted their normal peacetime studies or training to carry on a certain amount of study whilst still in uniform. Correspondence and other courses are already available for these, and it is intended to develop this method of training for those held in the Armed Forces after the end of the war on garrison and other duties at home and abroad. In such cases the training given in the Services will be related as closely as possible to the further training which the men will receive on return to civilian life.

Among the men and women who will be returning to civil life after the war will be those who, when called to the Forces or other war service, were employed as apprentices. The government proposes to introduce a scheme under which apprentices whose apprenticeship has been interrupted by war service will be able to complete their training and qualify as journeymen. State assistance will ensure that during the renewed apprenticeship the apprentice receives an adequate wage. A time allowance will be given for the period of war service; that is to say, the apprentice will not have to serve the whole of the period of apprenticeship which was unexpired when he (or she) entered on war service. The renewed training may be given in an employer's establishment or in a technical school or other approved training center. The apprentice will receive a maintenance allowance, including dependent's allowance, when undergoing training in a technical school or training center.

The technics of industrial arts are being extensively used by the British in occupational therapy for wounded soldiers. The illustration below shows veterans at carpentry.

In considering the postwar manpower situation in industry, the reforms in the educational system which the government has formulated must also be taken into account. Under the terms of the Education Bill now passed by both houses of Parliament, it is proposed to raise the school-leaving age without exemptions to fifteen, that is to say until the end of the term after the pupil has attained the fifteenth birthday. The Bill contemplates that this provision will operate as from April 1, 1945, but to meet the difficulties which may arise, owing to war conditions, in providing for the additional number of children by that date, the Bill also provides that the Minister may postpone this change up to a date not later than April 1, 1947. Further, the leaving age will eventually become sixteen, but it has been decided that it is not yet possible to prescribe a date for this further change, owing to the very heavy commitments with which local education authorities will be faced in the years immediately following the war.

These legislative changes will have the effect of removing roughly half the existing juvenile labor force from the mar-

(Continued on page 12)

Live Jobs Wake Up Lagging Automotive Class

BY *Stanley J. Drazek*

Fear that garage owners would oppose automotive classes from seeking real auto repair jobs was unfounded in Liberty High School, New York. In fact, writes Stanley Drazek, formerly instructor at Liberty, now in the army, they liked it, even helped. And the students—well, they took on new life.

THE automechanics shops having only an old car and one engine on a stand are really hard put to sustain student interest.

Despite the fact that most boys have a natural desire to study the automobile and to learn how to work on it, this natural interest can be, often is, quickly dulled by presenting them artificial situations for projects.

When a class is to grind valves, for instance, valves have to be "ground" which do not appear as pitted carboned valves. They may have been subjected to little or no running since last ground, and the project therefore presents no challenge to the class, certainly none to the instructor. This is true of other projects, all of which have been "completed" many times before by previous classes. This sort of thing tends to make both students and instructors listless.

Liberty, New York, High School automechanics classes experienced this decline in interest and it was decided to bring the class to life by bringing in a "live" job. It was rumored that the janitor's car was running badly, and when the class was asked if it would like to undertake the repair of the car, it acclaimed the idea with enthusiasm.

Before actual work was started, the class was divided into groups to perform the following jobs: (1) to wash, clean, and wax the car; (2) to pound out dents in fenders or body, spray, and rub down; (3) to grease and oil car, check battery, and tires, and alternate tires if necessary; (4) to make motor repairs and adjustments. So that each student would gain all types of experience, it was decided the groups would shift to different jobs on each project.

In ten days, the car came out shiny, running smoothly with its valves ground, new gaskets installed, and its plugs and points cleaned and adjusted. And the class was "rarin' " to go on a new project. Then a student in the class had a car that needed all forms of work from brakes, rings, bearings, to a new muffler. Other cars, varying from a '31 Chevrolet to a '41 Plymouth, came in to offer a wide variety of practical experiences.

Since the school car appeared to be useless, someone suggested, and the class agreed, that it be rebuilt into a farm tractor. After some planning, it was cut down, a heavy transmission and rear end were purchased, driveshaft welded and assembled, and the "Doodle Bug" was born. Another creative member suggested that a snow plow attachment be added to the "Doodle Bug" so that it could be used to clean walks and drives around the school. This was planned, built, and used satisfactorily.

During the course a detailed progression chart was kept up to date. This provided competition among the students and may have encouraged them to work harder. Grades were based on the number of jobs each student completed, his attitude, the type of work performed, and the grades on tests given periodically.

Fears that auto-repair shop owners would consider this work competition were unfounded, for instead of frowning at this new activity they rather favored it. In fact they saw an advantage in it for themselves since they expressed hope that they might be able to hire some of the boys for the summer. They even cooperated by offering to lend the school shop tools for certain operations.

Lectures and demonstrations are essential to any course, but they must be alive if the interest of students is to be directed to a vital learning process. Without real situations, instructors, as well as students, will lose interest; but where jobs come in that must be diagnosed and that will present problems to both instructors and students, the teaching and learning process will at once take on life, and the automechanics course will take its proper place again in the industrial arts department.

This Cabinet and Chest Project Inspires Student-Parent Planning

BY Harold O. Akeson

TESTED 55 PROJECT

ALL school-shop instructors recognize the value of parental approval of projects. Many projects of decorative value do not always, unfortunately, fit into the home. Parents nevertheless exhibit these projects to encourage the child, and after exclamations have been spent, the articles are quietly removed to the boy's own room or some less conspicuous place. Projects which are home necessities, therefore, are much to be desired, and if they can be planned and finished to fit into the home requirements they will be highly appreciated by parents.

Numberless cupboards and closets have been built into handy, accessible corners of new houses, but housewives who have homes built before the time of modern kitchen units, bathroom cupboards, and linen closets usually are hard put to find places to store the increasing number of household articles today considered necessities.

School-shop projects which enlist parent interest from the very outset are not numerous. They are desirable because they arouse strong motivation and they give students an opportunity to make a real contribution to home life. Harold O. Akeson, of the Department of Industrial Arts, East Orange, New Jersey, suggests in this article three pieces of furniture that can be made to fit special needs in the home. Materials for these projects are inexpensive, but the value of the finished product is high.

The utility cabinets and chest projects here shown have utility and economic appeal. The materials are inexpensive, but the value added to the materials through planning and skills of the student are surprising both to student and parents.

Although dimensions given in these illustrations have been found useful for standard projects, they can be changed to meet the home requirements, and the planning of the parents with the student in this regard will arouse interest in the project from its very inception and pose a variety of problems.

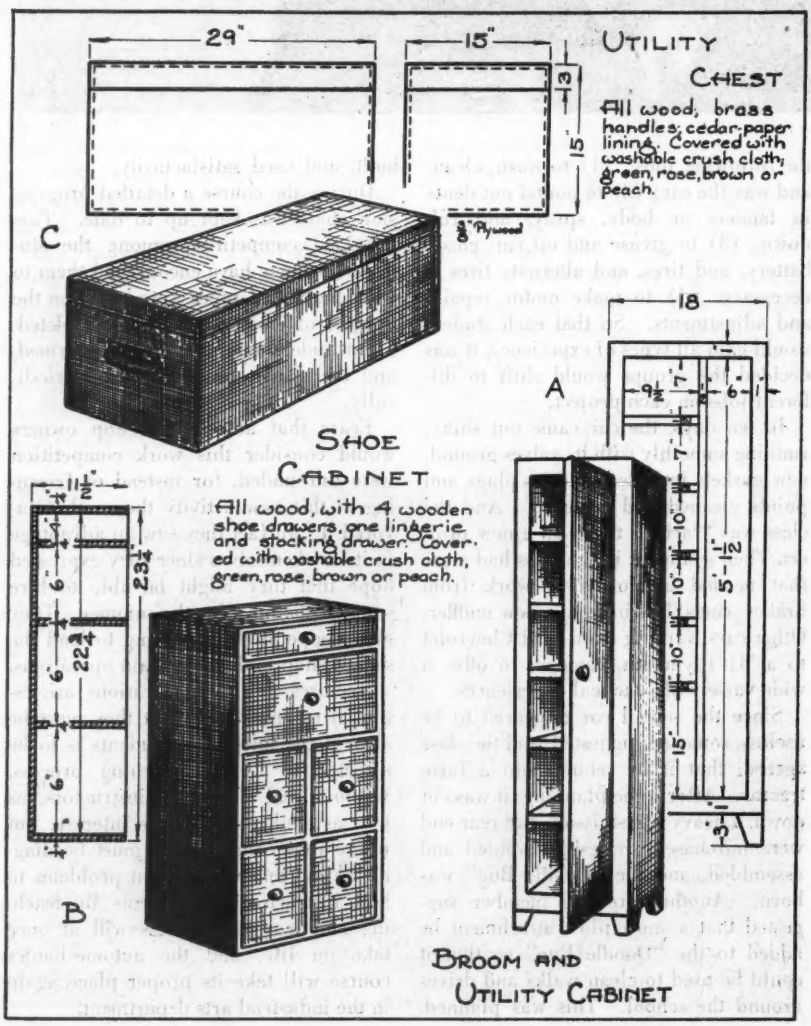
Construction details are not here shown, since instructors will want to select or recommend types of joints with the students. Nor are materials here discussed, since the projects lend themselves not only to the usual woods but to plywoods, Masonite, and wood substitutes.

The utility cabinet (A), shown in the accompanying sketch, takes care of many kitchen needs. It will fit into an 18-inch wall space and, when painted a harmonizing color, can be an attractive, as well as convenient, addition to the kitchen.

As drawn here, it stands 5′ 6½″ high. One part of the cabinet is designed for mops, brooms, and brushes. The other half has shelves for boxes, bottles, and soap supplies.

For the bedroom which has too little drawer room, the shoe cabinet (B) is most useful. It may, of course, be used for innumerable objects besides shoes. The four lower drawers, if used for shoes, will help to preserve order on the closet floor or shelf and will keep shoes free of dust. The dimensions may have to be changed to conform with the size of the closet. The dimensions here used are for standard size closets and will allow sweaters, coats, and blouses to be hung on a rod above the cabinet. Because the drawers are low and within reach of a small child, it makes a good place to keep toys, clothing, shoes, and small objects.

The utility chest (C) may be made large enough to accommodate quilts or blankets, using any desired dimensions, but the size given has proven to be satisfactory for storing household articles or children's toys.


29"
15"
UTILITY CHEST
All wood, brass handles; cedar paper lining. Covered with washable crush cloth, green, rose, brown or peach.
C
⅜" Plywood
18
A
SHOE CABINET
All wood, with 4 wooden shoe drawers, one linagerie and stocking drawer. Covered with washable crush cloth, green, rose, brown or peach.
B
BROOM AND UTILITY CABINET

CAMERAMAN TRACKS DOWN A TRADITION

Come war or high water, there is one tradition in the radio industry that continues to stand the test of time! It is the traditional quality for which every Meissner product is famous. With this in mind, our roving photographer recently made another trip to Mt. Carmel, Ill., just to track down the source of this priceless asset. Part of the answer he found in busy experimental laboratories and in superior manufacturing equipment. But most of all he found it in the skill of workers on the long assembly lines or in the care and pride revealed by every individual Meissner craftsman. Shown above is a typical Meissner production line.

Interesting, intricate are words which might well describe some of Meissner's highly specialized equipment (above and below) but "precision-el" is the one word which fits the company's highly trained personnel.

Father and (right background) son are typical of the way Mt. Carmel families have turned to electronics for lifetime work. Meissner is Mt. Carmel's leading industry.

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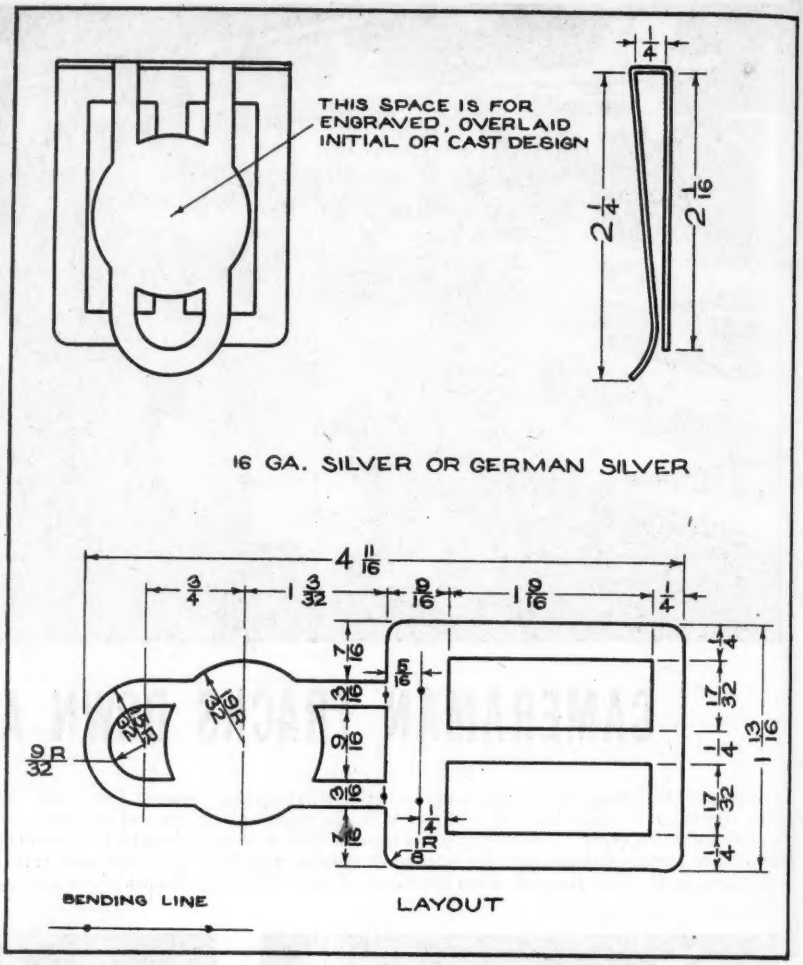
Bill Clip

BY *Rufus Jacoby*

It is a far cry from radar to a bill clip, but the skills used in making this project are identical to those used in fabricating small parts in a radar experimental division. Metalcraft instructors will find this project arouses considerable student enthusiasm. The author teaches in the Coolidge High School, Washington, D. C.



THIS bill clip, a project in the industrial arts, general metalcrafts course, developed out of the teacher's experience as a sheetmetal worker in a small radar plant. In the development of experimental models of electronic devices the sheetmetal layout worker is often required to layout and fabricate small parts by the use of hand tools. The worker must be skilled in the use of tools for the tolerances often range from .005" to .010".

The operations and skills required to make this clip are identical to those used in industry. Pupil motivation is achieved in the school shop by producing an article of value which can be used and displayed for approval. The pupil has a choice of materials — copper, German silver, or "Sterling." They invariably choose "Sterling" for they recognize the greater value of the finished product. The pupil works from a blueprint when laying out the job. He is encouraged to produce an original design to apply on the face of the clip. A coin may be soldered on the face; an overlaid initial makes the clip more personal.

In the layout the bend allowance is one-half the thickness of the metal (1/32") for each bend. Thus the layout will be 1/16" longer than the sum of the dimensions on the side view. The steps or procedure that follows may be planned by the teacher and the class or by the individual pupils:

1. Make freehand sketch.
2. Plan procedure.
3. Determine the size of the blank.
4. Cut out stock.
5. Layout on metal.
6. Center punch for drilling.
7. Drill holes.
8. Saw pierce.
9. File to the layout line.
10. Chamfer edges.
11. Remove scratches.
12. Curve front tip on lead.
13. Bend on brake.
14. Solder design on front.
15. Clean with steel wool.
16. Oxidize and highlight if desired.
17. Check and evaluate the completed job.

Britain Opens School Shops to Veterans . . . *from page 8*

ket, i. e., half the age range from fourteen to eighteen. The change was not, however, made for this reason, but because the Board of Education had become increasingly conscious of the fact that a leaving age of fourteen was much too low and was wasteful in that there was insufficient opportunity to lay a firm and enduring educational foundation.

The Bill, in addition, provides for compulsory attendance on one day a week at young people's colleges for all boys and girls between the school-leaving age and the age of eighteen. While this will mean a reduction in the hours of employment of juveniles, it is believed that this will be more than compensated for by the increased mental and manual adaptability and greater physical fitness which will result from keeping boys and girls in touch with educational facilities. It will also afford an opportunity to give young people who need it instruction which will help them in their occupations.

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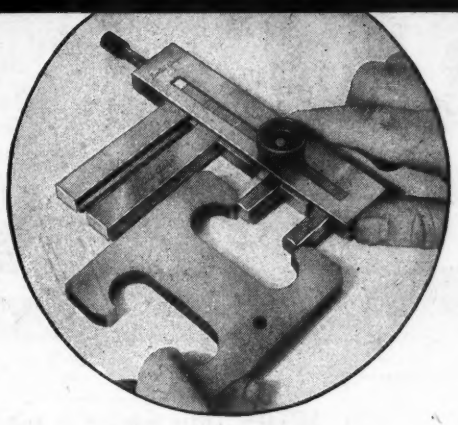

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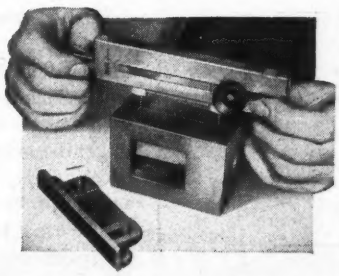

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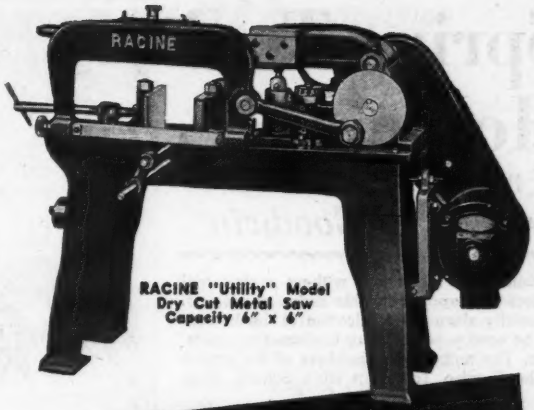

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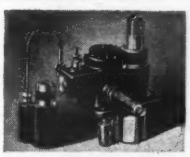

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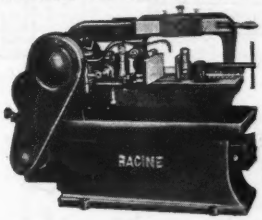

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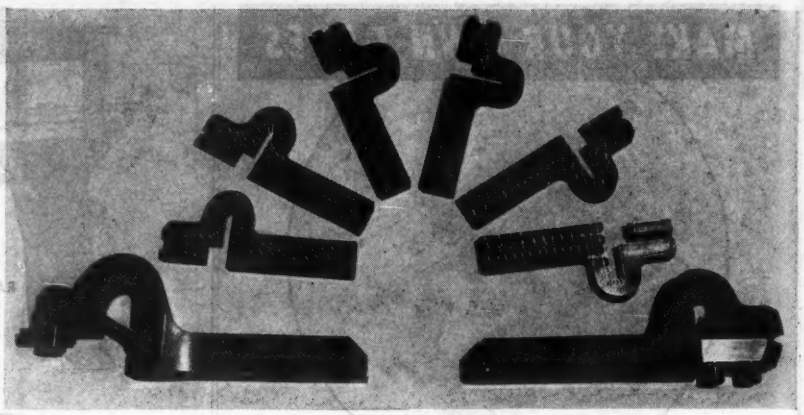
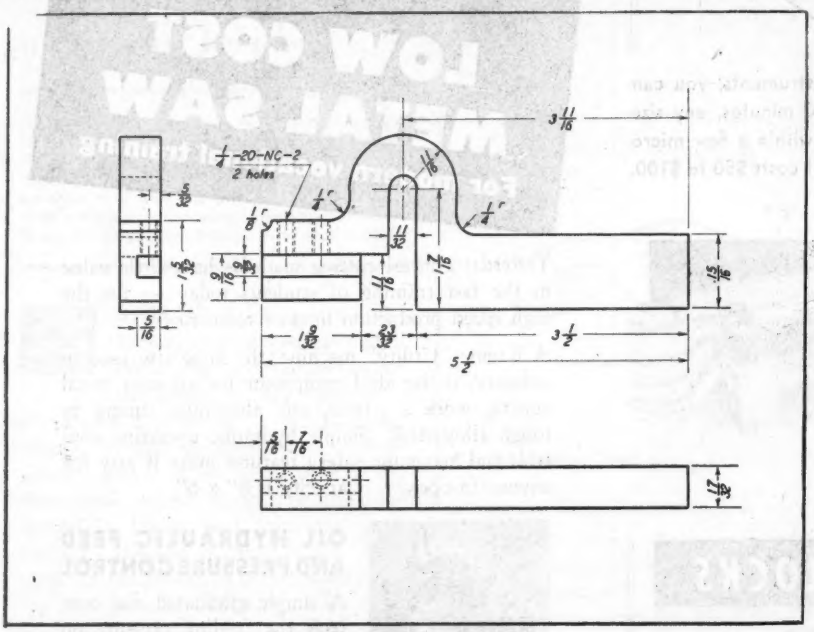
Spring Tool Holders

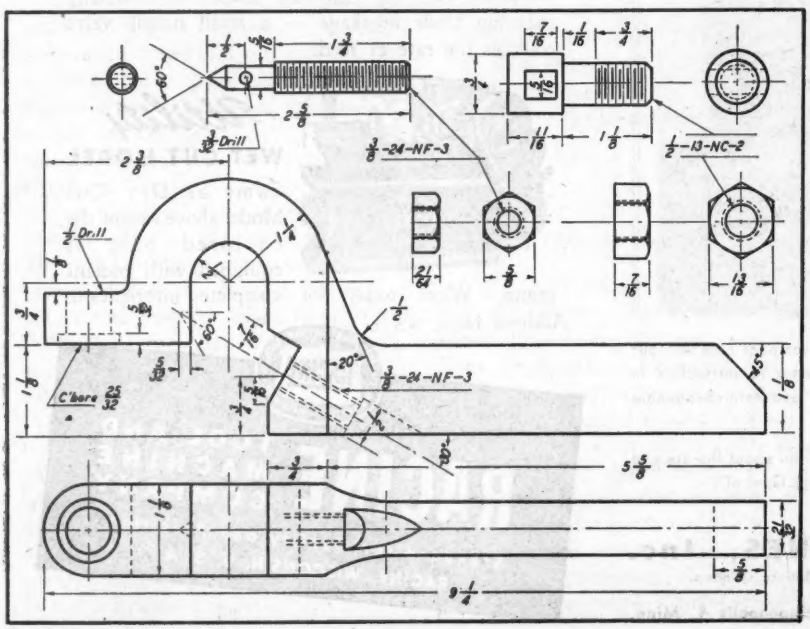
BY *Jon P. Adams*
AND *M. B. Goodwin*

Machine-shop instructors without spring tool holders will appreciate this series of projects, especially since the fabrication of the holders can be used to teach many fundamental operations. The authors are members of the faculty of the Proviso Township High School, Maywood, Illinois.





Above—Figure 1. Below—Figure 2.



TESTED INSTRUCTIONAL PROJECT

IT is possible to grind practically any form tool by using the radius dresser and angle wheel dresser described in recent articles appearing in SCHOOL SHOP. In many instances it is desirable to have a spring tool holder to hold form tools for both lathe and shaper work. This article deals with the construction of three different spring tool holders.

The smaller of the three spring tool holders was designed simply so that it might be produced in quantities since occasionally, in shop classes, it is necessary to provide one at each lathe.

The usual tool holder is designed with a square hole in the center for the tool bit. Since this tool holder was made for thread chasing only, it was found that the tool could be made more easily if the hole for the tool bit was milled on one side, as shown on the drawing. This method of construction gives sufficient support to the tool bit for all threading cuts. This tool holder was made for a 13" lathe and, if the dimensions shown are used, the top of the tool bit will be on center when the tool holder is level in the tool post, thus securing the 0° rake angle necessary in threading. In order to construct this holder for other sized lathes, it will be necessary to modify the dimensions shown.

All three spring tool holders were made of Ryerson "VD" tool steel, hardened at 1425° – 1450°, and drawn to a dark straw.

The construction of the holders can be simplified if the centers of all the radii are laid out and holes drilled, thereby forming the radius with the drill. The remainder of the piece is milled, shaped, or cut, and filed on a die saw.

The two largest holders were made for larger machines and varied applications. The one illustrated in figure 2

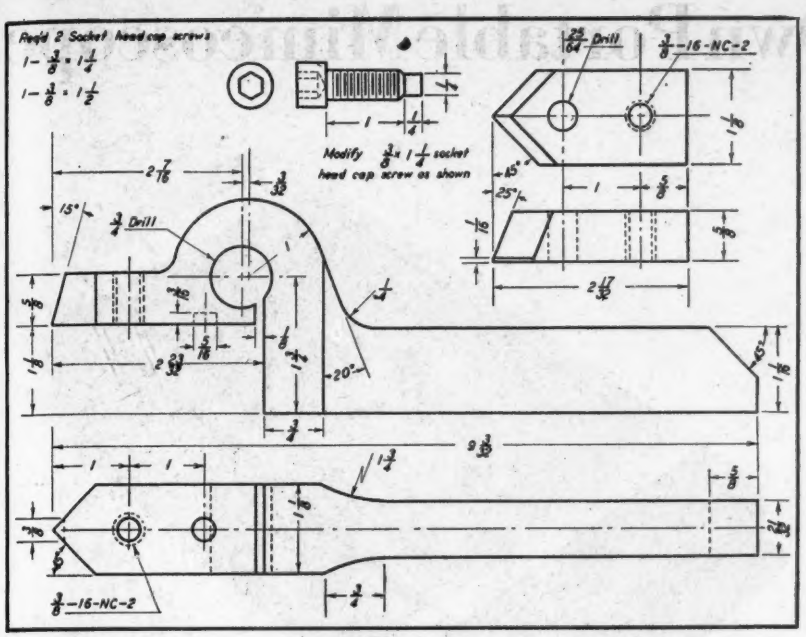


Figure 3.

holds a 5/16" x 7/16" tool bit and is excellent for threading, necking, or forming any radius that can be ground on that size bit. The amount of spring may be controlled by the screw or the spring may be eliminated altogether.

The holder shown in figure 3 is the best for general form tool work. Since it has a jaw rather than a hole for a certain size bit, tool bits of any size can be clamped and held firmly in place.

AVA Reconversion Conference

December 5-9 are the dates of this year's American Vocational Association Convention to be held in Philadelphia, Pa.

Reconversion training will be the theme of the conference, with various section meetings for agricultural education, business education, home economics education, industrial arts education, industrial education, part-time schools vocational guidance, and vocational rehabilitation stressing this important phase of vocational training for peacetime. Publication of a convention daily is under consideration with special issues featuring home economics, business, trade and industrial, and industrial arts education.

The GI "Bill of Rights" (Public Law 346) and the area trade school bill (S. 1946-H.R. 5079), copies of which are obtainable from your Senators or Congressmen, will be the center of discussion at several of the AVA meetings.

Convention hotels are the Hotel Benjamin Franklin, where the exhibits will be held, and the Adelphia Hotel. A list of hotels and rates may be secured by writing to the American Vocational Association, 1010 Vermont Avenue, Washington, D. C.

Collection of state vocational association dues at the national convention will be discontinued this year. Both state dues and national AVA dues should be paid well in advance of the Philadelphia convention since, in order to be seated in the House of Delegates at the Convention, a person must have been an AVA member during the 1944 membership year.

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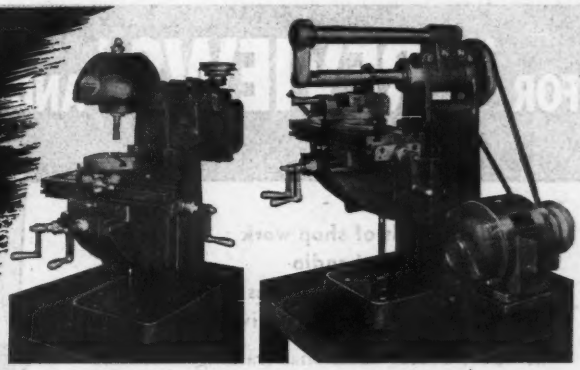

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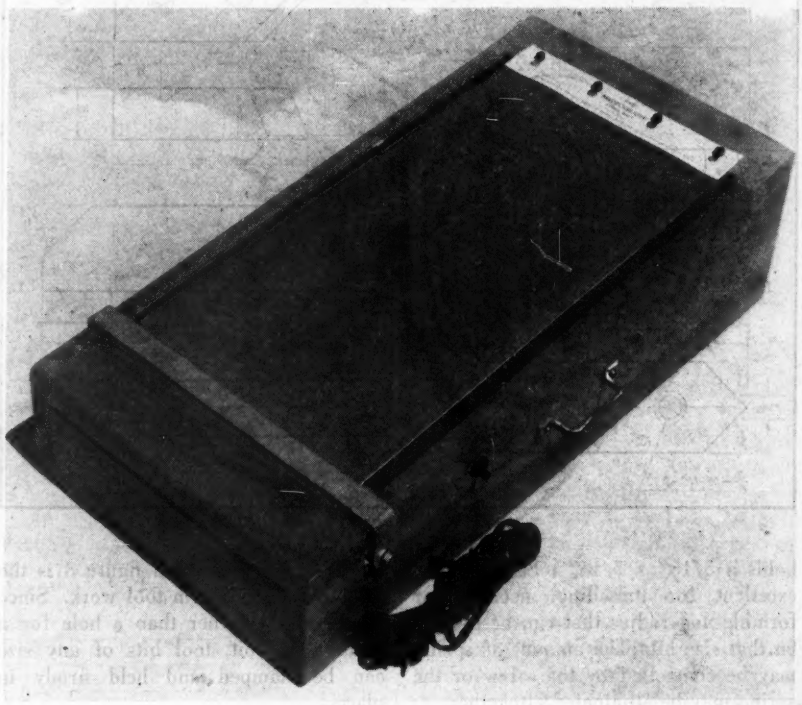
Build Your Own Portable Mimeoscope

BY *Lawson Miller*

Duplicated materials can be useful teaching devices. This project was designed by a teacher in the Eagle Rock High School, Los Angeles, California.



TESTED INSTRUCTIONAL PROJECT

THE average shop teacher doesn't use mimeographed material, particularly job sheets, to the fullest advantage because of the inconvenience of finding an available place to illustrate and cut mimeograph stencils. Use of mimeographed job sheets have numerous advantages. They can serve a whole class at the same time instead of two or three students. Corrections, additions, and replacements can be made with a minimum of effort. The materials may become a permanent part of every student's shop notebook.

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(Continued on page 20)

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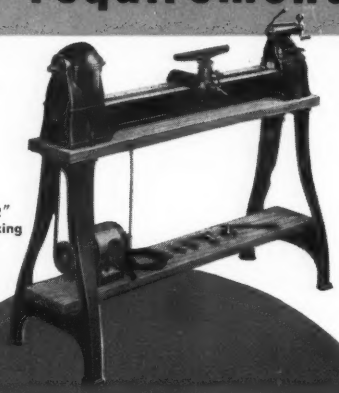
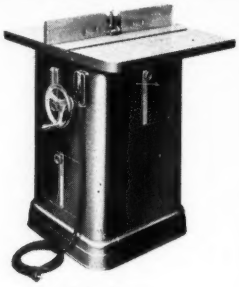


Delta 12" Woodworking Lathe



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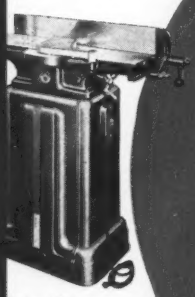
Delta 14" Band Saw (wood-cutting or metal-cutting)

Delta 17" Drill Press (for metal, wood, or plastics)



Delta 6" Jointer on Cast Iron Stand

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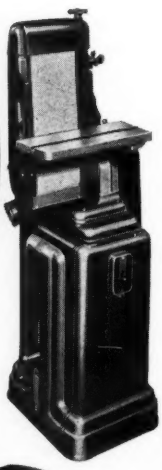
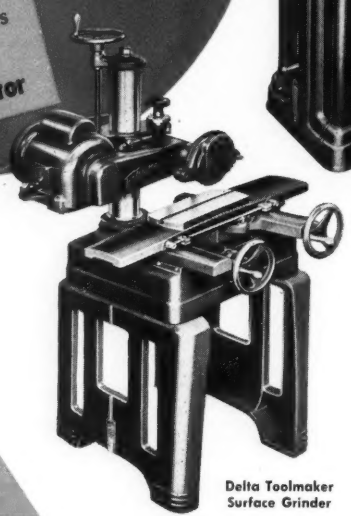


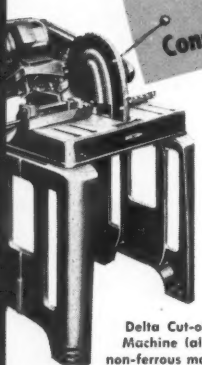
Delta Abrasive Belt Finishing Machine

Certain tools are available to schools under *automatic* priorities (CMP Regulation 5a).

Consult Your Delta Distributor



Delta Toolmaker Surface Grinder



Delta Cut-off Machine (also non-ferrous model)

Delta 4-speed Scroll Saw

Delta Abrasive Disk Finishing Machine

Delta Industrial Grinder with safety shields

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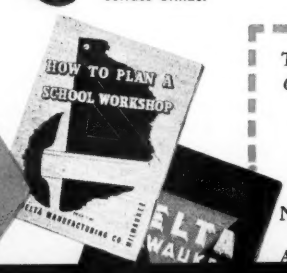

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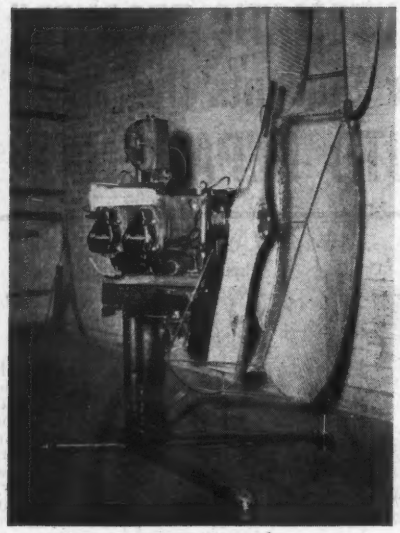
Portable Engine Stand

BY *O. F. Tramontine*

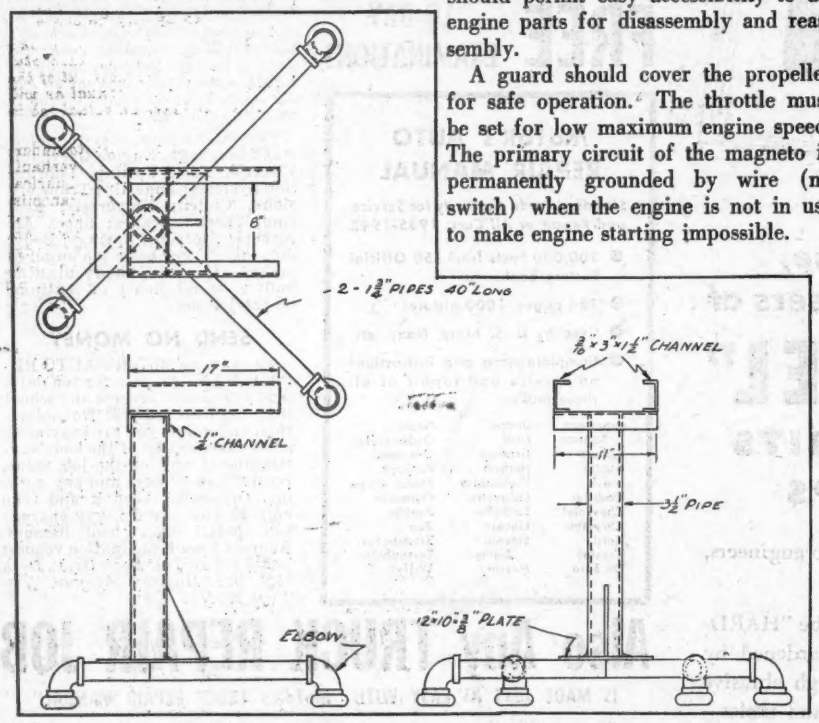


Many high-school automotive departments have the opportunity to acquire airplane engines, but such acquisition presents serious problems to instructors in shops where space is limited. How to mount these engines in such a way as to make them accessible for instruction, assembly, and disassembly has been solved by O. F. Tramontine, instructor in the automotive department in the Austin, Minn., High School.

THE addition of a horizontal-opposed four-cylinder air-cooled Franklin airplane engine to our automotive department presented the problem of engine mounting.

Owing to space limitation, the engine had to be mounted upon a compact portable engine stand. Engine stand design should permit easy accessibility to all engine parts for disassembly and reassembly.

A guard should cover the propeller for safe operation. The throttle must be set for low maximum engine speed. The primary circuit of the magneto is permanently grounded by wire (no switch) when the engine is not in use to make engine starting impossible.



Mimeoscope . . . *from page 16*

own needs. Only two or three precautions need be observed. Ventilate the box well near the ground glass to keep the stencil as cool as possible. The glass is crystal plate, ground on one side only. Put the clear side up.

Two light sockets are mounted at the lower end, inside. Long "showcase" type tubular lamps are ideal for lighting. The electric switch expedites much of the work and is convenient for turning off the lights when not needed, thus keeping the stencil cool on the long, more complicated jobs. A small Tee-square is an added aid used with the conventional triangles from the drafting room.

The shop teacher will find the portable mimeoscope as easy to carry as a dinner pail and usable at school and at home.

Have You Used Equation Method in Drawing I?

BY *William A. Doutt*

Teacher of Mechanical Drafting, West Junior High School, Kansas City, Mo.

WHEREAS some teachers in drawing use the method of dividing the paper in four equal parts and placing each view in its specific quarter, I find that this spreads the views and the drawing loses its coherence and is ambiguous to the student. Moreover, the student by this method may be misled by the belief that he is drawing single units instead of one unit placed in different positions to give size and conformation.

I prefer to teach the use of projection lines only in sufficient number to place the needed views in their proper positions. The views, two or more, are dealt with as a unit by the simple equation method and placed upon the sheet as such.

Thus, students are instructed to center the drawings in the working field of a margined sheet of paper. To do this they take the sum of the thickness of the top view, plus distance between views, plus width of front view: Thickness (T) + distance between views (Bt.V) + width (W); or T (2) + Bt.V (¾) + W (3); or 2 + ¾ + 3 = 5¾. Then 5¾ is subtracted from the width of the working field and the remainder is divided by two, if the drawing is to be centered, which gives the distance of the first construction line of the top view from the top margin line in its horizontal placement. The other horizontal lines are drawn as the equation designates. The vertical placement of the views is obtained likewise: (length + distance between views + thickness). Now the figure is exhibited in its outline form in its three views. Detail and other lines are now drawn from measurement from outline form lines, center lines, and location centers and the views are completed from points of position rather than by the use of projection lines. Beginners are not taught the 45° or "arc projection" methods for developing side or profile views because the maze made by numerous projection lines is confusing and causes erasures.

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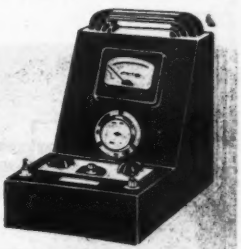

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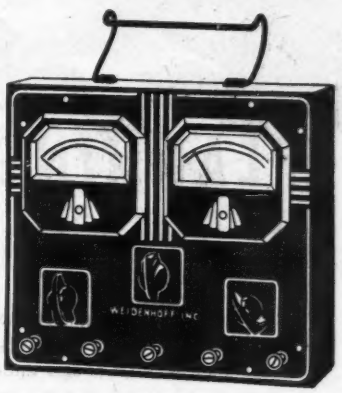

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news

WHAT'S DOING IN THE FIELD OF INDUSTRIAL EDUCATION

NEW officers have been announced by the National Association for Printing Education, Inc. Harold G. Crankshaw, Central High School, Washington, D. C., is president while Harold H. Kirk, Langley Junior High School, Washington, D. C., is the new vice-president. Fred W. Miller, Masonic Home and School, Fort Worth, Texas, the retiring president, is the new treasurer. Leroy Brewington of Kansas State Teachers College, Pittsburg, continues as editor of the Journal of the association. New members elected to the Board of Directors are: Herbert B. Downs, Weeks Junior High School, Newton Centre 59, Mass.; Arthur S. Williams, Government Printing Office, Apprentice School, Washington, D. C.; Herman A. Slater, Athens, Ohio; John C. Tranbarger, Indiana State Teachers College, Terre Haute; Leroy Brewington, Kansas State Teachers College, Pittsburg; Ignacio L. Guzman, Tuskegee Institute, Alabama; with Oscar A. Goetze, Golden, Colorado, and Frank E. Latson, Glenwood Springs, Colorado, a tie vote for District 14. Continuing in office for another year are board members: George T. Hart, Franklin High School, Rochester, New York; Joseph B. Coyle, Johnstown High School, Johnstown, Pa.; E. V. Harris, Murphy Junior High School, Atlanta, Georgia; William R. Baker, The Stout Institute, Menomonie, Wisconsin; Harold E. Sanger, Art Center, 32 West Randolph Street, Chicago, Ill.; Fred W. Miller, Masonic Home and School, Fort Worth, Texas; Edwin B. Harding, State Teachers College, Brookings, South Dakota; and Lieut. Allison J. McNay, Assistant Supervisor of Visual Education, Los Angeles, California, now with the Army Air Forces.

HALF a million dollars has been willed to the Delaware State Board of Vocational Education by the late H. Fletcher Brown for a new vocational school in southern Delaware. Mr. Brown was a member of the board of trustees of the University of Delaware and bequeathed $1,500,000 to the university also.

To sharpen and broaden its fight for progressive-democratic education, the newly formed organization, the American Education Fellowship (formerly Progressive Education Association), has announced a new basic policy. The new name expresses continued allegiance to the New Education Fellowship, a worldwide organization of forward-looking educators, of which the Progressive Education Association has been the United States Section. The American Education Fellowship will carry forward the principles of progressive education to new communities and new schools, extending its program to include a much wider participation on the part of forward-looking laymen as well as educators in shaping postwar education. Vinal H. Tibbetts will continue as Director of the Fellowship. Dr. Frank E. Baker, President of the Fellowship, stated the new policy: "At this world turning-point we must take the initiative in fighting for good education for all, we must expose the enemies of better popular education, and we must make the schools function as real people's schools." He said: "The earlier period of progressive education was greatly concerned with the individual child, but the period we are entering demands a more intimate concern with all groups in the community which largely determine whether the schools are to function as people's schools."

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The Radiant Screen here illustrated is Model DS—a portable Metal Tripod Screen—sturdy but light, compact, easily set-up, and is quickly adjustable. Available in sizes from 30" x 40" to 52" x 72".

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INSTRUCTIONAL RESOURCES

Inquiries concerning materials described in these columns may be addressed to SCHOOL SHOP, 330 S. State St., Ann Arbor, Mich.

BOOKS:

Woodworking for Everybody. Shea, Wenger. Scranton, Pa.: International Textbook Co., 1944. Pp. x + 187. $2.00.

Written primarily as a manual of information on woodworking technics for junior and senior high-school industrial-arts classes, this well illustrated book begins with the story of wood, proceeds to a discussion of shop equipment, and then goes into the various processes necessary in woodworking. Sections are included on joinery, woodworking machinery, tool sharpening, wood finishing, and safety in the shop. Forty-six modern projects with instructions and specifications are given, arranged in order of difficulty.

John G. Shea and Paul N. Wenger are special teachers of industrial arts, Greenwich, Conn., Public Schools.

Composite Aircraft Manufacture and Inspection. Michelon. New York: Harper & Bros., 1944. (Lithographed.) Pp. xi + 547. $6.00.

A practical encyclopedia of composite aircraft manufacturing and inspection, this book is designed for use as a handbook and reference manual for people concerned with either branch of the industry. Hundreds of aircraft parts today are made of plastics, wood, and fabric. Contrary to the popular belief that these materials are used only in plastic-plywood planes, the majority of such parts are being used in metal aircraft, wherever they can be used without minimizing to any significant degree the necessary performance and fire power. The book covers the basic materials from which composite aircraft are produced, and the Army-Navy aeronautical specifications relating to these materials; it discusses the processes by which these materials are fabricated into finished aircraft structures; and it presents the inspection instruments and methods which are used to insure reasonable safety and adequate performance.

Leno C. Michelon, a lieutenant (j.g.) in the U. S. Naval Reserve, is also author of *Industrial Inspection Methods.* Raymond J. Devereaux, 2nd lieutenant in the U. S. Army Air Forces, collaborated with the author in the preparation of some of the chapters.

Electrical Essentials of Radio. Slurzberg, Osterheld. New York: McGraw-Hill Book Co., 1944. Pp. xi + 529. $3.00.

Written for the reader with a limited mathematical background, this book represents the notes and supplementary material gathered and used by the authors in 12 years of teaching radio and electricity to high-school students and to men in radio, in the signal corps, and the signal corps reserve, as well as in preinduction courses. Examples are used throughout the book to illustrate the applications of the equations. Drawings are used to illustrate each principle as it is discussed. The principles of electricity are explained according to the electron theory; electrical principles peculiar to communications, although generally considered to be intricate, are explained in a comparatively simple manner. Numerous questions and problems are given at the end of each chapter, and sufficient reference data are given in the 12 appendixes at the end of the book so that no additional reference is necessary.

Morris Slurzberg and William Osterheld are instructors of electricity and radio in the Wm. L. Dickinson High School and in the Evening Technical and Industrial High School, Jersey City, N. J.

Chemistry and the Aeroplane. Clancey. New York: Ronald Press Co., 1943. Pp. 176. $2.25.

Another in a series of books by British authors, this book attempts to provide a link between the theory set forth in textbooks on chemistry and the practice of flight. Consequently some prior knowledge of chemistry is necessary to an understanding of the book. The book also tries to show the role of chemistry in the development of the airplane as part of a general dynamic process. The book opens with a chapter on "Making Flight Possible" and proceeds to a discussion of fuels, metals, gasses, plastics, and accessories. Index included.

MoToR's Auto Repair Manual. New York: MoToR Book Department, 572 Madison Ave., 1944 (revised). Pp. 764. $5.00.

This latest edition of *MoToR's Auto Repair Manual* contains some 200,000 auto repair facts on 31 makes of cars made since 1935, organized and indexed by make, model, and job for easy and swift reference. More than 1,000 diagrams, drawings, and photographs identify the various motor parts and illustrate correct service and repair procedures. Sections are included on tune-up, carburetors, generator and starter control units, clutches, brakes, universals, steering gear, wheel alignment, etc. Detailed and indexed data are given on engines; fuel, cooling, lubricating, and electrical systems; transmissions; front ends; knee action, etc.

How to Operate a Lathe. Shuman, Bardo. New York: John Wiley & Sons, Inc., 1944. Pp. v + 161. $1.75.

The question-and-answer technic is used in this book to present fundamental information on the operation of the lathe in a manner which will make the most of the learner's attention to a particular subject by first asking a specific question to direct his interest and then answering it immediately while interest is still high and learning is thus made easier. Material of the broadest usefulness to both the production and the toolroom lathe operator has been included in the volume. Chapters are given on the lathe and its parts, preparing the work, driving and holding the work, putting cutting tools to work, speeds and feeds, cutting fluids, turning on the lathe, and thread cutting.

John T. Shuman is coordinator and Lewis H. Bardo is instructor in toolmaking, both at Williamsport Technical Institute, Williamsport, Pa.

PAMPHLETS:

The Short Circuit that Moves Mountains is an interestingly illustrated booklet published by General Electric Company describing the amplidyne, which in principle is an externally driven direct-current generator using a short circuit and a compensating winding. Several of the amplidyne's typical applications are shown, and figures illustrating the gain in production levels since its use are also given. Write for GEA-4053, mentioning SCHOOL SHOP, to the General Electric Company, Schenectady, N. Y.

Essential Facts about Preinduction Training. PIT Bulletin No. 1, prepared by the War Department in conjunction with the U. S. Office of Education, presents a concise but comprehensive statement of the Army's needs for preinduction training and outlines the War Department policies followed in promotion of the PIT program. The booklet includes sections on the following: Army needs for preinduction training in relation to the various areas of learning, special preinduction programs, Army utilization of preinduction training, services to the schools, relationship with U. S. Office of Education, relationships with other pre-service programs, and a self survey check list. Copies of the bulletin may be obtained from Preinduction Training Officers in the various Service Command Headquarters.

Allied's Radio and Electronic Book Guide is a handy booklet designed to permit rapid selection of books by title, author, publisher, subject, or application on the simplest fundamentals of electronics and radio to the most advanced practices. Useful to the beginning student, radio amateur, instructor, or technician. Write for free copy to Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill., *mentioning School Shop.*

Radio Servicing Made Easy. Chicago: Supreme Publications, 1944. Pp. 44. 25c. This condensed manual presents essential radio fundamentals and simplified radio servicing technics. The material in the manual is taken from the three-volume *Practical Radio and Electronics Course,* but is complete in itself. Subjects covered include radio parts symbols, circuits using resistors, various types of resistors, properties of condensers, etc.

VISUAL AIDS:

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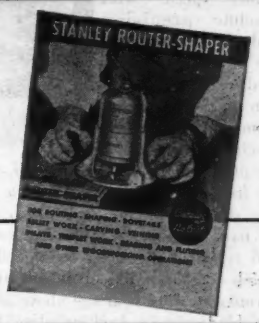

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. . . news from INDUSTRY

Coated Abrasives—Descriptions and Uses

Behr-Manning Corporation of Troy, N.Y., announces a new 14" x 18" wall chart on coated abrasives, which describes them and clearly indicates their preferred applications. The chart, suitable for shop or classroom use, may be had free of charge by writing the Behr-Manning Corporation, Troy, N.Y., *or by checking number 22 below.*

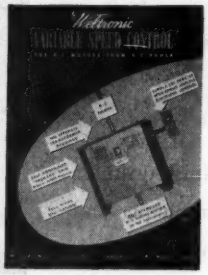
Peerless Mechani-Cut Metal Sawing Machine

A precision built and assembled mechanically driven metal-cutting saw which will cut at higher speeds with absolute precision and which is convertible to manually operated conveyor operation on the job is announced by Peerless Machine Company of Racine, Wis. New features of the machine are its compensating feed unit, a highly sensitive rack-and-pinion feed which compensates for hard spots in the work and varying shapes and types of stock; a four-sided saw frame which surrounds the blade and the work and permits locating bearings above and below the saw blade; and a backing plate, locked 1/32" above the saw blade, which gives added rigidity and permits maximum cutting pressures without undue injury to the blade. Write for bulletin MC-51 to the Peerless Machine Co., 1600 Junction Ave., Racine, Wis., *or check number 23 below.*

Radiant Projection Screens

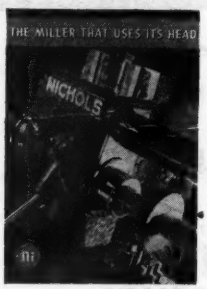
Increase student interest and add to the effectiveness of motion pictures and slides by using these new Radiant screens. Thousands of tiny glass optical beads, imbedded in the plastic surface of the screens, reflect the light instead of absorbing it. New brilliance, depth, and color are the result. The portable models have many improved features, including an automatic clutch, quick tripod release, and conversion from square shape to oblong quickly and easily. Wall, ceiling, and table models also available. For free catalog giving complete specifications and prices, write the Radiant Mfg. Corp., 1190 W. Superior St., Chicago 22, Illinois, *or check number 24 below.*

Weltronic Variable-Speed Motor Controls



Electronic, adjustable-speed motor drives which operate any d-c shunt-wound ½ hp to 15 hp motors from a-c power supply for driving lathes, grinders, drill presses, etc., are fully described and illustrated in a new brochure from the Weltronic Company. The units, operated from a simple push button and dial control station located conveniently near the operator, provide precise control of speed, acceleration, torque, horsepower, etc., over a wide range for the operation of standard shunt-wound d-c motors, eliminating the need for separate transformers and specially designed or oversize motors required, it is claimed, by conventional electronic motor drives. For full details write for Bulletin No. WTM-44 to the Weltronic Company, Detroit 19, Mich., *or check number 25 below.*

A Miller That "Uses Its Head"

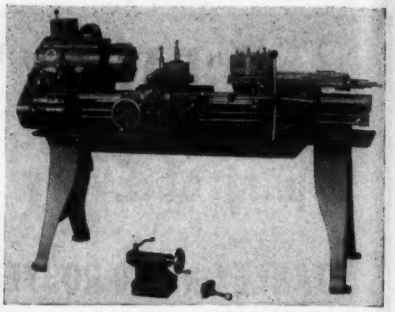


Flexibility and accuracy are combined in the new miller with a counter-balanced rise-and-fall spindle head which is described in this 12-page picture catalog just published by W. H. Nichols & Sons of Waltham, Mass.

The manner in which the miller works is fully described and illustrated; other processes, including contour millings, profile straddle milling, heavy hand milling, and vertical milling, are also shown. Construction highlights are described and pictured in detail and a section on "mass-precision" methods used at the Nichols plant is also included. For your free copy write W. H. Nichols & Sons, Waltham, Mass., *or check number 26 below.*

LeBlond Regal Lathe with Interchangeable Hexagon Bed Turret

A hexagon bed turret is now supplied on the LeBlond 13" and 15" Regal lathes, available with power feed or hand feed only. The exceptionally large turret, 9" across faces, contributes to a considerably longer life in alignment and accuracy. The six-station head, supported on double preloaded adjustable precision roller bearings which are automatically lubricated and adjustable for clearance, rolls on a large bearing face. Total length of travel of the ram, with either hand or power feed, is 6¼". For full specifications, write the R. K. LeBlond Machine Tool Co., Cincinnati 8, Ohio, *or check number 27 below.*



Lafayette Radio Becomes Concord Radio Corporation

Samuel J. Novick, long connected with the Lafayette Radio Corporation, announces a change in its name to the Concord Radio Corporation, emphasizing the fact that this change in no way affects the organization or personnel of the company, or its policies and service. Plans are being made for an expansion in its activities in electronics. For current and postwar literature and catalogs write the Concord Radio Corporation, 901 Peachtree Street, Atlanta 3, Georgia, *or check number 28 below.*

New Literature . . .

Barrett brake service equipment is fully described in a new catalog available from the Barrett Equipment Company, Cass Ave. at 21st St., St. Louis 6, Mo., *or by checking number 29 below.*

Benchmaster vertical and horizontal mills, rotary tables, vises and precision bench machine tools are described in brochures available from the Benchmaster Mfg. Co., 2952 West Pico St., Los Angeles 6, Calif., *or by checking number 30 below.*

Visual training aids, produced by the U. S. Office of Education and distributed by Castle Films, are listed in a new catalog covering machine-shop work, shipbuilding, aircraft work, farm work, and the slide rule. Write for Catalog No. 2 to Castle Films, Inc., 30 Rockefeller Plaza, New York 20, N. Y., *or check number 31 below.*

South Bend Precision Lathes is a new catalog describing all sizes and types of South Bend engine, toolroom, and precision turret lathes. Write for Catalog 100-D to the South Bend Lathe Works, South Bend 22, Ind., *or check number 32 below.*

Colton's No. 10 file cleaners, with steel back, frame, and face, fill the need for a lightweight, durable file card essential for proper maintenance of files and rasps in every school shop. Sold by your hardware store or school supply distributor. *For full information, check 33 below.*

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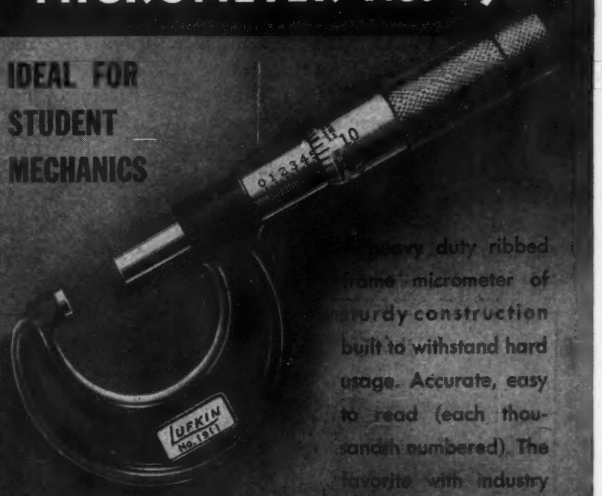

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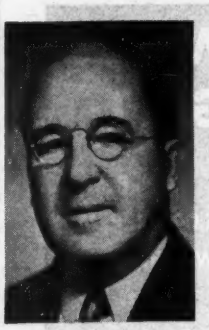
ABOUT YOUR FELLOW TEACHERS

ED CHERRY, school representative of the Stanley Works, was honored recently at a testimonial dinner in celebration of his 55 years of service with the Stanley organization. His activity in establishing contacts with schools was largely responsible for the establishment of the Educational Department of Stanley Tools in 1923 . . . R. H. ROBERTS, for 15 years director of industrial arts in the Winfield, Kans., public schools, and since May 1943, area training supervisor for the Tulsa, Okla., War Manpower Commission, succeeds R. B. MCHENRY as director of industrial and adult education in the Tulsa public schools. Mr. McHenry has accepted a position with the Gulf Oil Corp. . . . Returning to his position as professor of education at Northwestern University is EUGENE S. LAWLER, who has been serving in Washington, D. C., as chief of the research and statistics section of vocational training for war production workers, U. S. Office of Education . . . MILLARD F. PERSONS, supervisor of industrial education in the N. Y. State Department of Education since 1942, died Sept. 5 at the age of fifty-six . . . JOHN L. DUVALL has been appointed director of industrial education for the Richmond, Ind., public schools . . . WILLIAM E. NAGEL, formerly of Centralia, Ill., is teaching drafting, woodworking, and pre-flight aeronautics at the Washington, Ill., Community High School . . . Now teaching at Franklin High School in Portland, Ore., is LEROY C. BEGHTOL, for the past 5 years a teacher at the Cottage Grove, Ore., High School . . . WARREN A. WALKER, former drafting teacher at the Passaic, N.J., Wilson Jr. High School, is now teaching at the Kearny, N. J., High School . . . MYER L. CRUMB is teaching radio and electricity at the Montebello, Calif., High School, replacing E. L. Esterwold, who has entered the armed services.



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IN THE Morning Mail..

[Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Gentlemen:

To Mr. Gold's "Can You Fix This?" table (September SCHOOL SHOP, page 16) I would add a shoe last, hammer, and knife. I suppose in the ten years I have been teaching industrial arts I have on the average of five calls a year to replace heels which have been torn off on the steps, to replace loose soles, etc.

Thanks again for a *good* school shop magazine. I have every issue.

CHARLES F. ZITTLE,
Coatesville, Penna.

[And thank you for your excellent suggestion. With such cooperation from our readers we will soon have Mr. Gold's table prepared for any emergency!—*Ed.*]

Gentlemen:

I have enjoyed receiving SCHOOL SHOP very much and have found it to contain much material of value to me. It improves with every issue.

In order to eliminate duplications I am enclosing the wrappers from the last issue with the changes in personnel of the Bexley schools noted thereon.

ROBERT M. DUFFEY,
Columbus 9, Ohio

[We appreciate your help in keeping our mailing list up-to-date. With the paper situation as it is, every copy counts. We will welcome other corrections of our mailing list.—*Ed.*]

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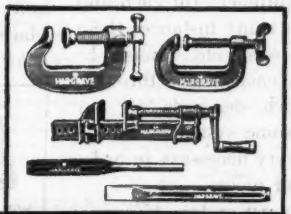

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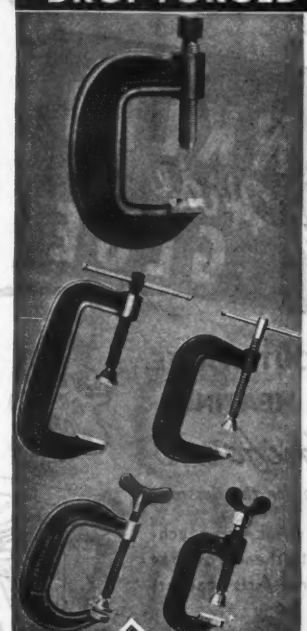

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Polishing Rounded Surfaces

A rounded surface similar to that shown in diagram A may be readily polished by taking a piece of ½" or ⅝" cold rolled steel and cutting a slot 2"x 1/16" in one end with a hacksaw. This is illustrated in diagram B. Cut a piece of emery cloth to the dimensions given in diagram C. Insert the left end of the emery cloth, indicated by the dotted line in the slot, and wrap the cloth tightly around the

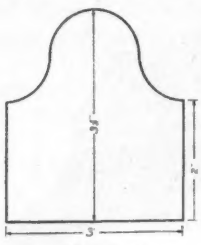

Diagram A

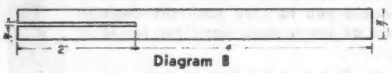

Diagram B

piece of steel. Fasten a piece of adhesive tape to end x securely. Use enough tape to make two turns around the piece of stock so that the sticky side of the adhesive tape may adhere to the cloth surface. The drill press should be run at about 5,000 revolutions per

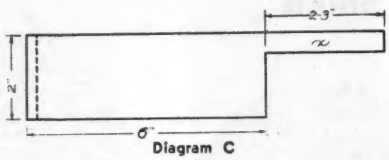

Diagram C

minute. Using a fine emery paper for the final polishing will give a very high finish.—*David T. Armstrong, formerly New Jersey State Teachers' College at Newark.*

Keeping Tab of Tools

In drafting or art classrooms not all of us are fortunate enough to have a complete set of equipment for each and every student. In many instances these pieces, drawing sets, etc., must be shared continually each period throughout the day. Such demands on our equipment make some system of charging or recording very necessary in order to keep trace of all pieces.

A very satisfactory system to use is arrived at through the use of waste calendar pages. Save those pages bearing different sizes of figures and, when you need a number or group of numbers, you have them handy, in various sizes applicable to practically all equipment from shop benches to instruments.

The figures, or groups thereof, may be attached to the object with a thin coating of white shellac and then skimmed over the top with a similar application, thus rendering it safe from wear and soil.

Numerical listings thus made are clear and readily discernible, even from quite a distance and material or equipment can be swiftly checked. The author has found this system, through past experience, to be very effective since from the desk every piece can be checked in a moment. Under this method the pencil, lettering pen, and eraser are kept in numbered pencil boxes which are filed with the instrument case in a pigeonhole rack where all may be noted in place or not at a glance.—*Robert M. Whiting, Reading, Mass.*

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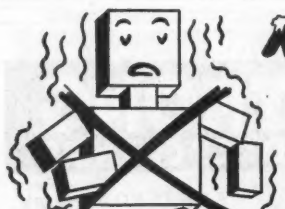

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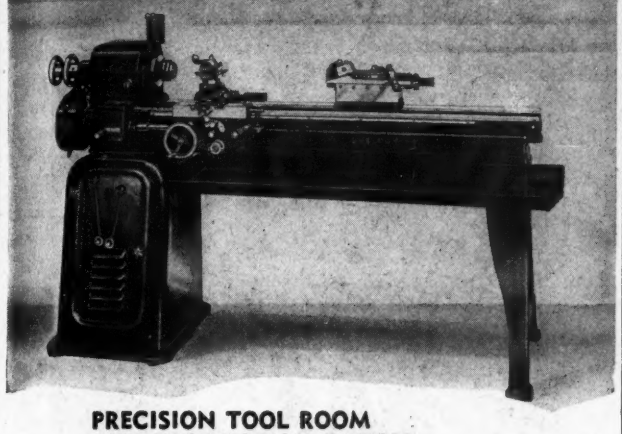

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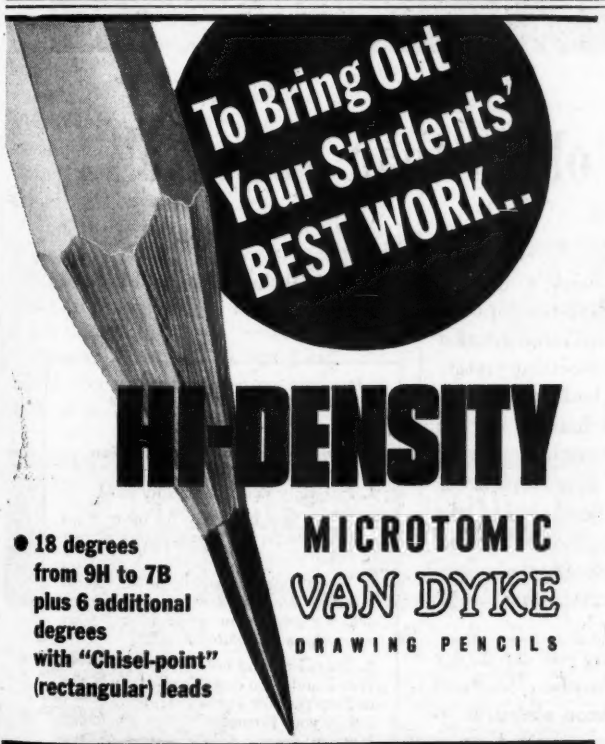

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Perhaps I'm one war older than you are!

Believe me, after the last war I saw what happened. Will you let me give you some advice?

•

If you've got a job today—for your own sake, fellow, be smart! Think twice before you fight for a wage increase that might force prices up and land you behind the eight-ball in the end.

Salt away as much as you can out of your present wages. Put money in the bank, pay up your debts, buy more life insurance. Above all, put every extra penny you can lay your hands on into Uncle Sam's War Bonds—and *hold* 'em!

Nobody knows what's coming when the Germans and the Japs are licked. Perhaps we'll have good times. Okay. You'll be sitting pretty. Perhaps we'll have bad times. Then they're sure to hit hardest on the guy with nothing saved.

The best thing you can do for your country right now is not to buy a thing you can get along without. That helps keep prices down, heads off inflation, helps to insure good times after the war.

And the best thing you can do for your own sake, brother, if there *should* be a depression ahead, is to get your finances organized on a sound basis of paid-up debts—and have a little money laid by to see you through!

4 THINGS TO DO to keep prices down and help avoid another depression

1. Buy only what you really need.
2. When you buy, pay no more than ceiling price. Pay your ration points in full.
3. Keep your *own* prices down. Don't take advantage of war conditions to ask for more—for your labor, your services, or the goods you sell.
4. *Save.* Buy and hold all the War Bonds you can afford—to help pay for the war and insure your future. Keep up your insurance.

HELP US KEEP PRICES DOWN

A United States War Message prepared by the War Advertising Council; approved by the Office of War Information; and contributed by this magazine in cooperation with the Magazine Publishers of America.

from Washington *from page 34*

● All too rare are Dr. J. W. Studebaker's utterances on vocational education, which he seems to prefer to leave to his colleagues, J. C. Wright and Layton Hawkins. But when the U. S. Commissioner of Education does say something on this subject, as he did to your correspondent recently, he says it with clarity and vigor. In a few words he traced a pattern for vocational education which might be applicable to all its branches—whether for business or trade and industrial training.

First, says Dr. Studebaker, vocational educators must learn to take the pulse of the labor market periodically. They must learn to gauge at all times how many workers business or industry may require at any one time—and the kind of skills which will be in demand.

Next, we must locate those pupils who like and want vocational training. "This does not mean every Tom, Dick, or Mabel," says Dr. Studebaker. It doesn't mean the dull ones any more than the brilliant ones. It means those whose interests and aptitudes show that they will profit from vocational training.

"Once we locate such persons, let's give it to them straight," and those are exactly his words. He continued: "In other words, let us provide them with definite technical skills for specific occupations. This implies that we will forget, at least for many in this group, questions of college-entrance requirements. It means we will find what industry and business need and we will try to meet these needs."

And having equipped individuals with skills needed by industry, vocational educators still have a responsibility, along with others, to place the trainee in a job and to follow up his progress.

Here are standards to which all vocational educators may well repair as they look to the postwar years.

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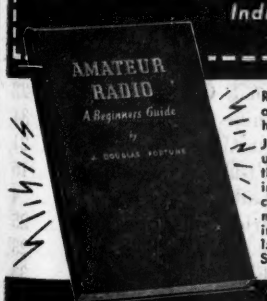

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from WASHINGTON by MICHAEL PACA

PRESIDENT Roosevelt has been very slow to sign the two major bills in which educators have an interest, namely, the reconversion act (S. 2051) and the surplus property disposal act (HR. 5215). These acts had been placed on the President's desk by the middle of September but as this is being written he has not yet made them law by his signature.

There is no particular reason for impatience, since organized education has very little to gain by the approval of these acts. As already reported, the clauses of the original Kilgore-Murray-Truman reconversion bill setting up a vast retraining program have been knocked out by the Congress during its heated debates on reconversion legislation.

It should be reported, however, that this emasculation does not at all worry most Washington education officials. In fact, some are glad that this took place. They point out that education can now proceed on its own reconversion program, freed from entangling alliances with politics and federal controls.

● What is that program? What is on the agenda in Washington as educators look forward to the postwar years and to a real strengthening of public education? Here are its three main points:

First, wipe out, with federal help, the "feast and famine" in general public education; do away with conditions which permit one child to get the best that modern schooling can offer while another child a few score miles away is deprived of his rightful opportunities. In other words, equalize schooling opportunities and help all the states once and for all to finance adequately their systems of general public education.

As L. H. Dennis, AVA Secretary, says: "General education is the foundation upon which we build in the development of specific vocational training programs." It is for this reason that Washington leaders in vocational education support the General Aid Bill (S. 637) which seeks some $300,000,000 to be appropriated to the states to help them adjust teachers' salaries to the cost of living and generally equalize school opportunities.

● Next on the agenda is extending and expanding vocational education itself. Most urgent need is for centers to serve vocational needs of rural youth; but all the segments of vocational education require strengthening to help retrain veterans returning from military service. That is the task which the George Dondero bill (S. 1946) seeks to carry out.

Hearings on this $97,000,000 measure will be scheduled soon after election day. Meanwhile, much hard, careful work is being done behind the scenes to pave the way for its speedy approval.

● Assuming that youth would be served more or less adequately if these measures were approved by Congress, what about the millions upon millions of adults who are reached neither by general high schools, by the vocational programs, nor by the traditional colleges and universities? What about those whose education has been obsolete? What about those eager to learn new skills or new facts of the basic issues of industry and social trends?

To serve these, Washington leaders have drafted the College and University General Extension Act (S. 1670). This measure would set up a vast adult education program through state universities and land-grant colleges financed by a gradually increasing federal appropriation until 1948. For that year and each year thereafter $20,000,000 would be appropriated.

● These then are the "things to do" on education's postwar agenda. And in the White House and in both wings of the Capitol things are happening which may speed consideration and approval of these bills.

In the White House the first conference on rural education ever to be held there will spur not only the General Aid Bill but also the area vocational school movement. Some 200 leaders of rural life have assembled in the Nation's Capital for this NEA-sponsored meeting.

In the Senate side of the Capitol, a movement is afoot to set up a Commission for Children and Young People. Proposed by a special Senate subcommittee which studied the effect of the war on youth, this proposed Commission would tie in the scattered federal and state programs seeking to serve youth. In the words of the Senate Committee, it would "offer generalship in the fight to give our children maximum opportunity for growth as American citizens."

The House of Representatives, in an unusual move, provided money to a group of educators to study the effect of war upon the colleges. Francis J. Brown of the American Council on Education, who is heading this study, however, is ranging beyond the college area. He is exploring the methods by which higher education can "reach down" to serve the vast army of adults who at present do not fit into our traditional educational structures. His findings are apt to bolster the fortunes of the College and University Extension Bill.

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